

REMARKS

Claims 1-15 are now pending in this case. Applicants have added claims 14 and 15 for purposes of provoking an interference with U.S. Patent No. 5,478,852 to Olefsky et al., assigned to Sankyo Company ("the '852 patent"). As applicants will demonstrate, these added claims define allowable subject matter that interferes with the invention recited in claims 23-27<sup>1</sup> of the '852 patent.

I. THE SPECIFICATION FULLY SUPPORTS CLAIMS 14 AND 15

Claims 14 and 15 are directed to methods of treating impaired glucose tolerance (IGT) in a host suffering from this condition by administering a therapeutically effective amount of the claimed thiazolidinedione compounds: 5-(4-(2-(N-methyl-N-(2-pyridyl)amino)ethoxy)benzyl)-2,4-thiazolidinedione or 5-(4-(2-(N-methyl-N-(2-pyrimidinyl)amino)ethoxy)benzyl)-2,4-thiazolidinedione.

Example 5 and Example 30, respectively, disclose and teach how to make each of these compounds. At page 92, the specification provides a working example for using the compounds disclosed in the application in an "Obese Mice, Oral Glucose Tolerance Test."<sup>2</sup> As described in the example, the mice were initially treated with various test compounds disclosed in the application and then given an oral load of glucose. An analysis of the blood samples taken at specified time intervals provides an indication of the compounds ability to reduce blood glucose levels, measured as the percentage reduction in area under the blood glucose curve compared to the controls. The reduction in blood glucose levels relative to the control in the IGT mice demonstrates the effectiveness of the test compounds in treating IGT in a host.

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<sup>1</sup> Although entered into the record by virtue of a granted Amendment under Rule 312, claims 24-27 do not appear in the printed patent. Nonetheless, since nothing in the file history of the '852 patent indicates that they should not have been included, applicants have treated them as existing patent claims. Indeed, a certificate of correction may have already been filed to remedy this error.

<sup>2</sup> Those skilled in the art have long recognized the use of the obese mouse as a model of IGT. See, e.g., Flatt et al., "Development of Glucose Intolerance and Impaired Plasma Insulin Response to Glucose in Obese Hyperglycemic (ob/ob) Mice," Horm. Metab. Res., vol 13, 1981, pp. 556-560, which is enclosed herewith. In the introduction of this publication, the authors acknowledge that obese mice exhibit an impaired insulin response to a glucose challenge, resulting in impaired glucose tolerance and marked insensitivity to insulin.

The compound of Example 5 represents one of the many compounds used in this glucose tolerance test. It exhibited a 40% reduction in area under the glucose curve, evidencing its effectiveness in compensating for insulin resistance and thus treating IGT.

The following Table 1 summarizes where the present specification supports claims 14 and 15.

**Table 1**

Claims 14 and 15	Support in applicants' specification
14. A method of treating impaired glucose tolerance comprising administering to a host suffering therefrom a therapeutically effective amount of	Page 92, lines 1-44 in example entitled: "Obese Mice, Glucose Tolerance Test"
a compound selected from the group consisting of 5-(4-(2-(N-methyl-N-(2-pyrimidinyl)amino)ethoxy)benzyl)-2,4-thiazolidinedione and	Example 5, page 63.
5-(4-(2-(N-methyl-N-(2-pyridyl)amino)ethoxy)benzyl)-2,4-thiazolidinedione.	Example 30, page 86.
15. The method of claim 14, wherein the compound is 5-(4-(2-(N-methyl-N-(2-pyridyl)amino)ethoxy)benzyl)-2,4-thiazolidinedione.	Example 30, page 86.

II. AN INTERFERENCE BETWEEN THE PRESENT APPLICATION AND THE '852 PATENT IS APPROPRIATE

Applicants believe an interference should be declared between claims 14 and 15 of this application and claims 23-27 of the '852 patent. Although these claims differ somewhat in scope, an interference is nevertheless appropriate.

An interference is appropriate between an application and an unexpired patent of different parties when the application and the patent contain claims to the same patentable

invention. 37 C.F.R. § 1.601(i). 37 C.F.R. § 1.601(n) provides the following test for determining whether two parties claim the same patentable invention:

Invention "A" is the "same patentable invention" as invention "B" when invention "A" is the same as [35 U.S.C. § 102] or obvious [35 U.S.C. § 103] in view of invention "B" assuming invention "B" is prior art with respect to "A".

The Table 2 below succinctly demonstrates that at least one of applicants' claims, claim 15, defines the same invention as claim 23 of the '852 patent and that claim 15 defines allowable subject matter. Specifically, assuming claim 15 represents invention "B" and constitutes prior art against claim 23 (invention "A"), claim 15 would anticipate claim 23, within the meaning of section 102.

**Table 2**

Claim 15 (in independent form for comparison)	Claim 23 of the '852 patent
15. A method of treating impaired glucose tolerance comprising  administering to a host suffering therefrom a therapeutically effective amount of  5-(4-(2-(N-methyl-N-(2-pyridyl)amino)ethoxy)benzyl)-2,4-thiazolidinedione.	23. A method of treating impaired glucose tolerance to prevent or delay the onset of noninsulin-dependent diabetes mellitus comprising  administering to a host suffering therefrom a therapeutically effective amount of a compound consisting of . . .  5-[4-[2-[N-methyl-N-(2-pyridyl)amino]ethoxy]benzyl]thiazolidine-2,4-dione. . .
<p>The chemical structure shows a thiazolidinedione core (a five-membered ring containing sulfur and nitrogen atoms) substituted with a 5-(4-(2-(N-methyl-N-(2-pyridyl)amino)ethoxy)benzyl) group. The pyridyl ring has an amino group (N-methyl-N-(2-pyridyl)amino) attached via an ethoxy chain.</p>	<p>The chemical structure shows a thiazolidinedione core (a five-membered ring containing sulfur and nitrogen atoms) substituted with a 5-[4-[2-[N-methyl-N-(2-pyridyl)amino]ethoxy]benzyl] group. The pyridyl ring has an amino group (N-methyl-N-(2-pyridyl)amino) attached via an ethoxy chain.</p>

As this comparison between the language of these claims shows, Applicants' claim 15 does not recite preventing or delaying the onset of noninsulin-dependent diabetes mellitus (NIDDM) because the specification does not literally contain that language. Nonetheless, the

'852 patent acknowledges that treating IGT and returning an individual to a state of glucose tolerance will inevitably result in preventing or delaying the onset of NIDDM.<sup>3</sup> Col. 18, lines 9-12. Therefore, by treating IGT, applicants' claimed method will inherently prevent or delay the onset of NIDDM.

As indicated by the ellipses in Table 2, Claim 23 of the '852 patent contains additional compounds that enlarge its overall scope. Since the single compound of claim 15 corresponds exactly to the specified compound of claim 23 of the '852 patent (see Table 2), claim 15 is completely subsumed within broader claim 23 and defines the same invention. Thus, claim 23 of the '852 patent and applicants' claim 15 embrace the same invention, making an interference appropriate.

Applicants' claim 14 additionally covers the compound of Example 5, which differs from the compound of claim 15 only in the presence of a 2-pyrimidinyl moiety instead of a 2-pyridyl moiety attached to the amino group at the left-hand portion of the compound. It is believed that the compound of Example 5 defines the same patentable invention as the compound of applicants' claim 15 and the compounds of claim 23 of the '852 patent.

### III. APPLICANTS' CLAIMS 14 AND 15 ARE PATENTABLE

Applicants' claim 14 is totally subsumed within claim 23 of the '852 patent. If claim 23 of the '852 patent (which has already been issued) is patentable, claim 15 must be patentable for the same reasons. Moreover, if applicants' claim 15 is patentable, then the slightly broader claim 14 must also be patentable.

### IV. PROPOSED COUNT

In proposing a count for this interference, applicants have followed the widely-used convention of linking the two broadest corresponding claims from the present application and the '852 patent by "OR." This proposal satisfies the requirement of 37 C.F.R. § 1.606 that at the

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<sup>3</sup> See also the passage at page 1505 in Saad et al., "The Natural History of Impaired Glucose Tolerance in the Pima Indians," N. Eng. J. Med., vol 319, 1988, pp 1500-1506, which suggests that treatment of impaired glucose tolerance for preventing the development of NIDDM.

time of declaring an interference, a count shall not be narrower in scope than any application claim that is patentable over the prior art and designated to correspond to the count or any patent claim that corresponds to the count.

For the Examiner's convenience, applicants have included with this Request a completed "Interference-Initial Memorandum" (Form PTO-850). The proposed count, as required by Rule 607, is provided as an attachment to that Memorandum.

Applicants' claims 14 and 15 should be designated as corresponding to that count. From the '852 patent, claim 23 and its dependent claims 24-27 should be designated as corresponding to the count.

V. RELEVANT DATES

Applicants will now show that, based on the relevant dates, they should be designated as senior for the proposed count. The present application claims benefit under 35 U.S.C. § 119 of the following British applications:

No. 8720825, filed September 4, 1987;

No. 8727987, filed November 30, 1987; and

No. 8802454, filed February 4, 1988.

As the last application in a chain of prior U.S. filed applications, the present application also claims benefit under 35 U.S.C. § 120 as follows:

Serial No. 358,327, filed December 19, 1994, a continuation of

Serial No. 053,997, filed April 26, 1993, a continuation-in-part of

Serial No. 641,474, filed January 15, 1991, now U.S. Patent No. 5,232,925, a continuation-in-part of

Serial No. 457,272, filed December 27, 1989, now U.S. Patent No. 5,002,953 ("the '953 patent"), a continuation-in-part of

Serial No. 238,764, filed August 30, 1988, now abandoned.

The '852 patent, filed on August 23, 1994 as a continuation-in-part application, claims section 120 benefit of Application Serial No. 122,251, filed on September 15, 1993. Relying at least on the filing date of their '953 patent, applicants can establish a date of invention prior

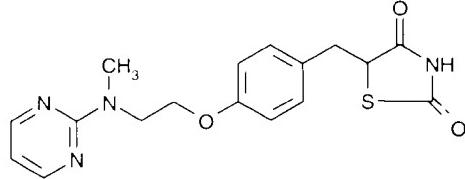
to the earliest possible effective filing date obtainable for the '852, thereby supporting their designation as senior party for the invention of the proposed count.

To receive benefit of a filing date of a prior application for interferences purposes, one need only show constructive reduction to practice for a single species within the scope of the count. *Mori v. Costain*, 214 U.S.P.Q. 295, 297 (Bd. Pat. Int. 1981). Referring to the '953 patent, Applicants rely on the compound 5-(4-(2-(N-methyl-N-(2-pyrimidinyl)amino)ethoxy)benzyl)-2,4-thiazolidinedione to establish a constructive reduction to practice within the scope of the proposed count.

Example 5, column 26 of the '953 patent, identifies the this compound by name, describes how to make it, and provides NMR data confirming its structure. To demonstrate its efficacy in treating IGT, the '953 patent sets forth an Obese Mice, Oral Glucose Tolerance Test using the compound of Example 5. As discussed previously, this compound exhibited a 40% reduction in area under the glucose curve, evidencing its effectiveness in compensating for the insulin resistance and thus treating IGT.

Each application in the chain of the present application subsequent to the '953 patent contains the same supporting disclosure. In fact, Table 3 below summarizes the applicants' proof of constructive reduction to practice for the proposed count in each of these applications back to the the British priority application No. 8802454, filed on February 4, 1988.

Table 3

	 <p>Example 5 5-(4-[2-(N-methyl-N-(2-pyrimidinyl)amino)ethoxy]benzyl)-2,4-thiazolidinedione</p>
Serial No. 358,327	<p>Written Description: Example 5, page 63, line 4 How to make: Example 5, page 63, line 16 How to use: page 92, line 4, in "Obese Mice, Oral Glucose Tolerance Test"</p>
Serial No. 053,997	<p>Written Description: Example 5, page 63, line 4 How to make: Example 5, page 63, line 16 How to use: page 92, line 4, in "Obese Mice, Oral Glucose Tolerance Test"</p>
Serial No. 641,474 (U.S. Patent No. 5,232,925)	<p>Written Description: Example 5, Col. 26, line 34 of the '925 patent How to make: Example 5, Col. 26, line 45 of the '925 patent How to use: Col. 39 of the '925 patent in "Obese Mice, Oral Glucose Tolerance Test"</p>
Serial No. 457,272 (U.S. Patent No. 5,002,953)	<p>Written Description: Example 5, col. 26, line 13 of the '953 patent How to make: Example 5, col. 26, line 25 of the '953 patent How to use: Col. 37 of the '953 patent in "Obese Mice, Oral Glucose Tolerance Test"</p>
Serial No. 238,764	<p>Written Description: Example 5, page 55, line 2 How to make: Example 5, page 55, line 16 How to use: page 80, line 2, in "Obese Mice, Oral Glucose Tolerance Test"</p>
GB 8802454	<p>Written Description: page 30, line 2 How to make: page 30, line 16 How to use: page 32, line 2, in "Obese Mice, Oral Glucose Tolerance Test"</p>

Having established a constructive reduction to practice of the proposed count in a prior application that antedates the earliest effective filing date obtainable for the '852 patent, applicants should be designated as senior party.

**VI. THE REQUIREMENTS OF 35 U.S.C. 135(b) ARE MET**

The '852 patent issued on December 26, 1995. By this amendment, applicants have presented claims 14 and 15 within one year after the '852 patent issued. Therefore, the presentation of claims 14 and 15 for interference purposes satisfies the requirements of section 135(b).

**VII. CONCLUSION**

As demonstrated, applicants' claims 14 and 15 define allowable subject matter that interferes with claims 23-27 of the '852 patent. In making this demonstration, applicants have complied with all the requirements of Rule 607. An interference based on the proposed count is therefore appropriate. And since applicants have shown an effective date for the proposed count prior to the earliest possible effective filing date for the '852 patent, the interference should be declared with applicants designated as senior party as to the count.

Accordingly, applicants request the Examiner to issue the following relief:

(1) Prepare and transmit Form PTO-850 (completed sample enclosed) recommending the Administrative Patent Judge institute an interference between the present application and the '852 patent.

(2) Propose the count as set forth in this Request and designate applicants' claims 14 and 15 of the instant application, and claims 23-27 of the '852 patent as corresponding to the count.

(3) On Form PTO-850, indicate applicants' entitlement to benefit of at least the filing date of the '953 patent for the proposed count and designate applicants as senior for this count.

The Commissioner is hereby authorized to charge any necessary fees associated with this filing to our Deposit Account No. 19-2570. If a fee is required for an extension of time under

37 C.F.R. § 1.136 not accounted for herewith, applicants petition for such an extension and request that the extension fee also be charged to our Deposit Account.

Respectfully submitted,

  
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